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SUBJECT: ISRAEL MAKES PROGRESS ON DESALINATION SUBSTITUTION

¶1. (U) Summary: Now entering its fifth year of substandard rainfall, Israel is making notable progress in substituting desalinated sea water for natural source fresh water for public consumption. Expanded production from existing seawater facilities should reach 160 million cubic meters (mcm) annually shortly, with an additional 36 mcm of water from brackish water desalination operations. A new seawater desal plant in Hadera will add 127 mcm in phases starting by the end of 2009. Capacity for another 250 mcm is at the tendering stage, and a further 50 million mcm is under review for future action. By 2013 Israel should have about 578 mcm of desalinated water per year available - 75 percent of household consumption needs. This will come at the price of heavy demand on the country's power infrastructure, however, which is very dependent on foreign energy sources. This additional power demand will have a negative impact on Israel's CO2 emissions, making potential climate change gas reduction targets harder to achieve. End Summary.

Good News on the Water Front

¶2. (U) ESTH officer recently toured Palmachim desalination plant, opened in 2007, that presently desalinates 30 mcm per year. Executives of Global Environmental Solutions (GES), the Israeli-based company that constructed the Build-Operate-Own project, said it is undergoing a 50 percent expansion, to produce up to 45 mcm annually. The expansion will take up to a year to implement. The Israel Water Authority has also asked the French-Israeli IDE group that operates the Ashkelon Desalination facility, a BOT operation that came on stream in December 2005, to increase its capacity. Ashkelon will move from 100 mcm to 120 mcm per year once additions are completed. Before the end of 2009, a new plant located in Hadera will start to produce desalinated water, initially 100 mcm annually to be expanded to 127 mcm in coming years.

¶3. (U) On September 9, the European Investment Bank, which is the European Union's long-term investment arm, announced that it will provide about half of the financing for the Ashdod desalination plant, a facility in the tender phase which is expected to provide 100 mcm by the end of 2012. EIB financing of NIS 1.5 billion (USD 400 million) is important as the EIB's low interest rate will lower the final price of the water produced. Financial closing for the Ashdod facility, which will be a BOT operation, is expected in March ¶2010. The EIB has also expressed willingness to offer financing for a desalination facility at Sorek that will produce 150 million cubic meters annually. The Sorek plant is in the tender process and should also start operation in 2012.

¶4. (U) In sum, by the end of 2010 Israel may have as much as 292 mcm of desal water available, some 38 percent of consumer use fresh

water consumption. If planned constructions keep to schedule, a total of 578 mcm of manufactured water may be available by 2013. Given that Israel's domestic household consumption use of water in 2007 was 767 mcm, desalinated water will cover more than 75 percent of household fresh water needs. This represents 37 percent of total water use, the balance being agricultural use at 57 percent and industrial use at 5.7 percent of the total, whose needs can be filled in part by treated wastewater. The fall in demand on natural freshwater supplies may be more than the exact counterpart amount, in fact, because of the high rate of wastewater recycling in Israel. With nearly 80 percent of first use freshwater captured, treated, and reused for agricultural or industrial purposes, each gallon of desalinated water can replace 1.8 times the volume of direct-use natural fresh water. Authorities hope this will relieve the stressed and over-pumped rivers, springs, aquifers and Lake Kinneret.

The Good News is the Bad News

¶5. (SBU) While water self-sufficiency would be good news, it comes at a high price. Desalination requires large amounts of energy to pump sea water through reverse osmosis membrane filters. These filters trap the salts and minerals in a residual brine which is returned to the sea. Achieving up to 80 bars of pressure for desalination is costly, even with the recapture of some energy through an innovative system that improves the energy efficiency of the process by 60 percent. The Ashkelon desal plant was constructed with its own natural gas-fired generating plant, so as to be independent from the public grid. Officials at the Ministry of National Infrastructure acknowledge that the energy demands of desalination impact their plans for augmenting generating capacity in the Israeli grid. Each cubic meter of desalinated water needs 4

to 5 kilowatt hours of electricity to produce - the major cost factor in production. Estimates of the energy needs for all the desalination capacity present and planned run from 3 up to 6 percent of total national power. Israel already expends five percent of its total energy capacity pumping water around the country.

¶6. (SBU) Last year Israel tendered its first major solar power plant, and passed regulations creating an incentive structure for renewable energy producers to feed-in to the national grid. Nonetheless, conventional sources like coal (69%), natural gas (20%)and fuel oil (9%) still provide most of Israel's electric energy. The national goal is 10 percent of alternative energy by ¶2020. So far only four of the 12 major power plants have been converted from coal to natural gas. The discovery of the Tamar natural gas field, holding 88 billion m3, off Israel's Mediterranean coast near Haifa may help speed other conversions, but CO2 output from power generation will rise regardless of its coal or gas source. The director of a leading environmental NGO in Israel estimates that the current and new desalination facilities will together increase Israel's CO2 emissions by 4 percent due to their energy needs.

¶7. (SBU) Comment: Israel's quest for desalinated water capacity is putting in jeopardy its ability to achieve any actual reduction in CO2 emissions. Although Israel has not officially committed itself to an emissions reduction target, the country's growth in water desalination capacity, its growth in consumer electric energy demand (4-5 percent most years), and growth in population (about 2 percent annually) imply that a reduction in the absolute output of emissions (compared to a decline in the relative rate of growth) may be very difficult to achieve. Additional sources of CO2 and other GHGs such as the transportation and the building/housing sector also contribute substantially to Israel's emissions. However improving vehicle mileage and building heating/cooling efficiency progresses slowly, as these are not point sources and implement requires several years. Nonetheless, Israel's population has responded well to previous calls for conservation, reportedly saving 15 percent in consumer water usage over the past year, and may do so again. A campaign dedicated to water, electricity, and lifestyle conservation may modify the present path which is leading towards a trade-off between water sufficiency and climate change emissions reductions.

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